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HAPAS Certificate
14/H211
Product Sheet 1

LOW & BONAR GEOSYNTHETICS

ENKAGRID PRO GEOGRIDS

This HAPAS Certificate Product Sheet(1) is issued by the British Board of Agrément (BBA), supported by Highways England (HE) (acting on behalf of the Overseeing Organisations of the Department for Transport; Transport Scotland; the Welsh Assembly Government and the Department for Infrastructure, Northern Ireland), the Association of Directors of Environment, Economy, Planning and Transport (ADEPT), the Local Government Technical Advisers Group and industry bodies. HAPAS Certificates are normally each subject to a review every three years.
(1) Hereinafter referred to as 'Certificate'.

This Certificate relates to Enkagrid PRO(1) Geogrids, a range of uniaxial polymeric geogrids manufactured from extruded high tenacity polyester bars welded together to form grids for use as reinforcement in embankments with slope angles up to 70°.
(1) Enkagrid PRO is a registered trademark.

CERTIFICATION INCLUDES:

- factors relating to compliance with HAPAS requirements
- factors relating to compliance with Regulations where applicable
- independently verified technical specification
- assessment criteria and technical investigations
- design considerations
- installation guidance
- regular surveillance of production
- formal three-yearly review.

KEY FACTORS ASSESSED

Soil/geogrid interaction — interaction between the soil and geogrids has been considered and coefficients relating to direct sliding and pull-out resistance proposed (see section 6).

Mechanical properties — short- and long-term tensile strength and elongation properties of the geogrids and loss of strength due to installation damage have been assessed and reduction factors established for use in design (see section 7).

Durability — the resistance of the geogrids to the effects of hydrolysis, chemical and biological degradation, UV light exposure and temperature conditions normally encountered in civil engineering practice have been assessed and reduction factors established for use in design (see sections 8, 9 and 11).

The BBA has awarded this Certificate to the company named above for the products described herein. These products have been assessed by the BBA as being fit for their intended use provided they are installed, used and maintained as set out in this Certificate.

On behalf of the British Board of Agrément

Date of Second issue: 30 August 2017

Originally certificated on 1 May 2014

Brian Chamberlain
Head of Technical Excellence

Claire Curtis-Thomas
Chief Executive

The BBA is a UKAS accredited certification body – Number 113.

The schedule of the current scope of accreditation for product certification is available in pdf format via the UKAS link on the BBA website at www.bbacerts.co.uk
Readers are advised to check the validity and latest issue number of this Agrément Certificate by either referring to the BBA website or contacting the BBA direct.

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Requirements

In the opinion of the BBA, Enkagrid PRO Geogrids, when used in accordance with the provisions of this Certificate will meet the requirements of Highways England and local Highway Authorities for the design and construction of reinforced soil embankments with slope angles up to 70°.

Regulations

Construction (Design and Management) Regulations 2015
Construction (Design and Management) Regulations (Northern Ireland) 2016

Information in this Certificate may assist the client, designer (including Principal Designer) and contractor (including Principal Contractor) to address their obligations under these Regulations.

See sections: 1 *Description*, 3 *Delivery and site handling* (3.1, 3.3 and 3.4) and the *Installation* part of this Certificate.

Additional Information

CE marking

The Certificate holder has taken the responsibility of CE marking the products in accordance with harmonised European Standard BS EN 13251 : 2016. An asterisk (*) appearing in this Certificate indicates that data shown are given in the manufacturer's Declaration of Performance.

Technical Specification

1 Description

1.1 Enkagrid PRO Geogrids are planar structures consisting of a regular open-network of integrally-connected, highly orientated, extruded polyester bars, welded together to form the grids. The principal load bearing bars run along the roll length and are coloured black. The transverse bars are clear.

1.2 The range of Enkagrid PRO Geogrids included in this Certificate is listed in Table 1. The short-term performance characteristics of the geogrids are shown in Table 2. The typical configuration of the geogrids is illustrated in Figure 1.

Figure 1 Enkagrid PRO Geogrids

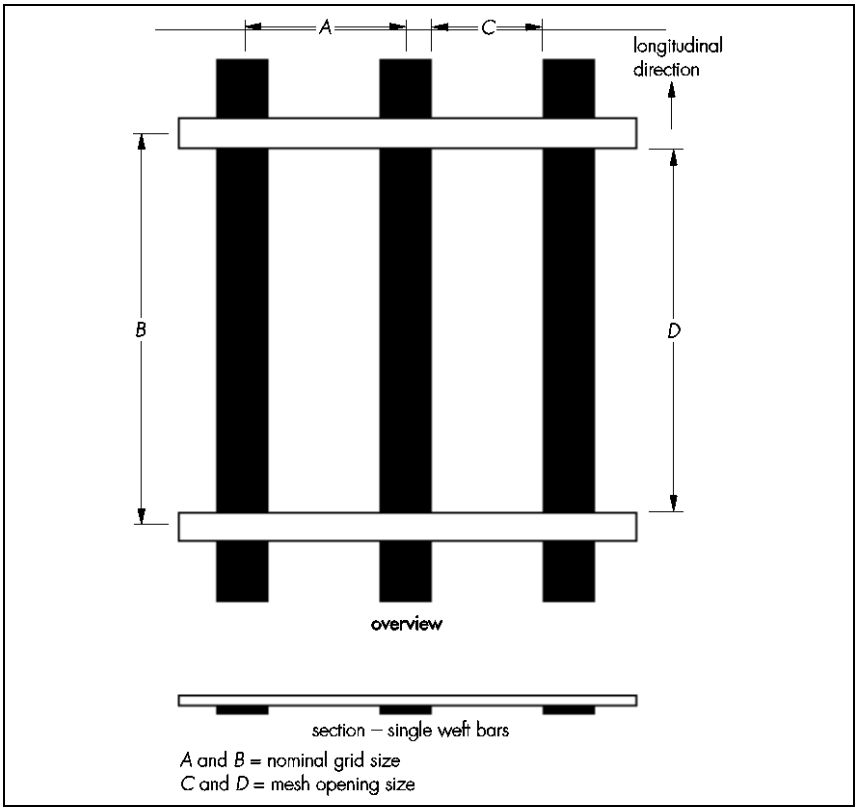


Table 1 General specifications

Grade	Nominal mass ($g.m^{-2}$)(1)	Average grid size(2) (mm) A x B	Average aperture size(2) (mm) C x D	Colour code(3)	Roll width 2.45 m		Roll width 5.0 m	
					Roll length (m)	Gross roll Weight (kg)(4)	Roll length (m)	Gross roll weight (kg)(4)
PRO 40	215	50 x 120	41 x 111	white and yellow	50	35	100	126
PRO 60	280	50 x 120	37 x 111	white and green	50	43	100	159
PRO 90	390	50 x 120	35 x 111	white and blue	50	57	100	214
PRO 120	440	50 x 120	34 x 111	white and grey	—	—	100	239
PRO 180	640	50 x 120	34 x 111	white and black	—	—	100	339

(1) Mass/unit area measured in accordance with BS EN ISO 9864 : 2005.
(2) Reference dimensions (see Figure 1).
(3) In accordance with BS EN ISO 10320 : 1999.
(4) Gross weight = geogrid + core + packaging.

Table 2 Performance characteristics

Grade	Machine Direction (MD)				Cross Machine Direction (CMD)			
	Short term tensile strength[1] (kN per m width)			Mean strain at maximum tensile strength[1] (%) (*)	Short term tensile strength[1] (kN per m width)			Mean strain at maximum tensile strength[1] (%) (*)
	Mean value (*)	Tolerance (*)	T_{char}[2]		Mean value (*)	Tolerance (*)	T_{char}[2]	
PRO 40	44	-4	40	6 (-1/+2)	25	-5	20	7 (-1/+2)
PRO 60	70	-6	64	6 (-1/+2)	25	-5	20	7 (-1/+2)
PRO 90	102	-7	95	6 (-1/+2)	25	-5	20	7 (-1/+2)
PRO 120	127	-7	120	6 (-1/+2)	25	-5	20	7 (-1/+2)
PRO 180	197	-9	188	6 (-1/+3)	25	-5	20	7 (-1/+2)

(1) Values derived from short-term tests in accordance with BS EN ISO 10319 : 2008.
(2) The characteristic short-term tensile strength (T_{char}) values are the mean short-term tensile strength minus 1 x the tolerance value, in accordance with BS EN 13251 : 2016.

2 Manufacture

2.1 The geogrids are manufactured from integrally-connected, highly orientated, extruded high tenacity polyester (polyethylene terephthalate, PET) bars of various section sizes, which are welded together at the appropriate centres to form the grids.

2.2 As part of the assessment and ongoing surveillance of product quality, the BBA has:

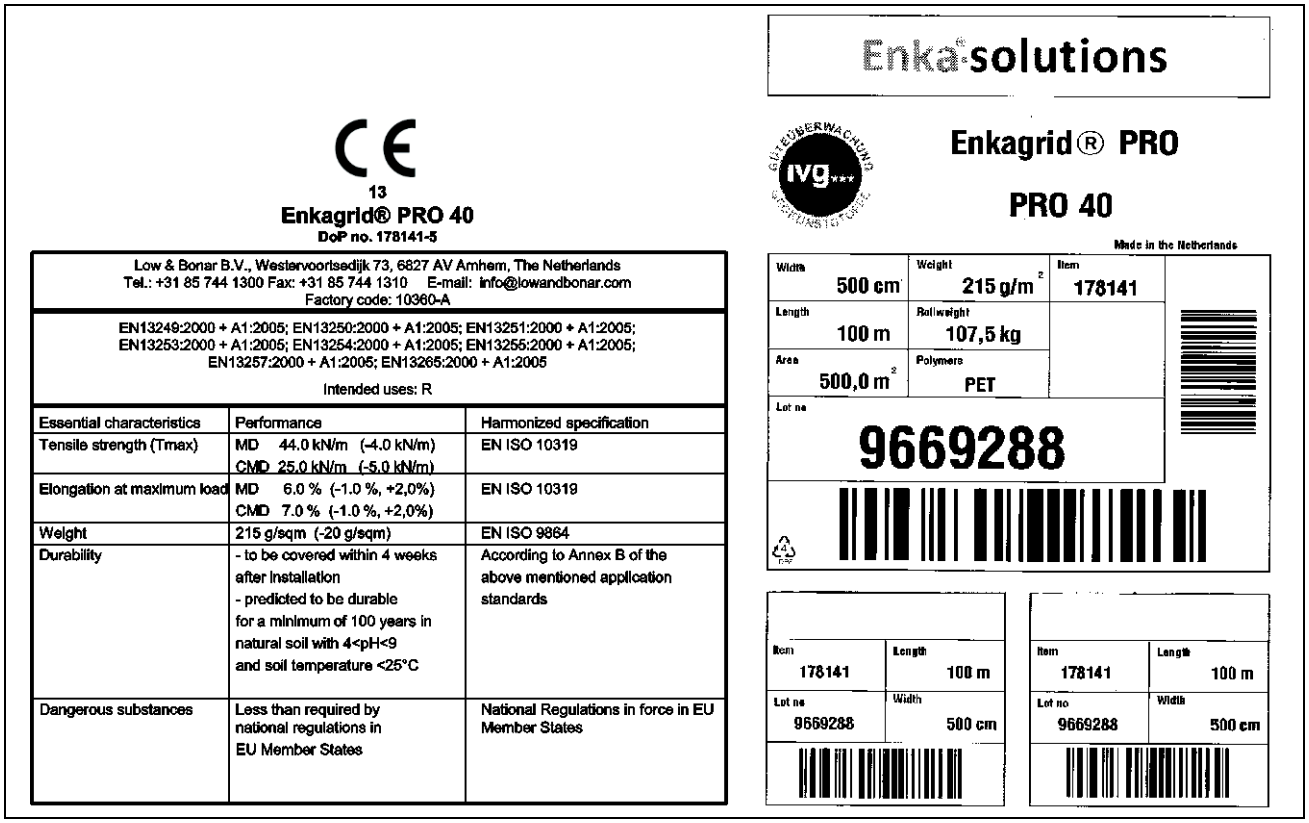
- agreed with the manufacturer the quality control procedures and product testing to be undertaken
- assessed and agreed the quality control operated over batches of incoming materials
- monitored the production process and verified that it is in accordance with the documented process
- evaluated the process for management of nonconformities
- checked that equipment has been properly tested and calibrated
- undertaken to carry out the above measures on a regular basis through a surveillance process, to verify that the specifications and quality control operated by the manufacturer are being maintained.

2.3 The management system of Low & Bonar B.V. has been assessed and registered as meeting the requirements of EN ISO 9001 : 2008 by Lloyd's Register Quality Assurance, Approval (Certificate No 935136).

3 Delivery and site handling

3.1 The geogrids are delivered to site in rolls of approximately 0.5 m diameter. Rolls are supplied in 50 or 100 m lengths and 2.45 or 5.0 m widths (see Table 1). Each roll is wrapped in black polythene foil and labelled with the geogrid grade and identification (see Figure 2). The packaging should not be removed until immediately prior to installation.

Figure 2 Typical label



3.2 The ends of the rolls are sprayed with colour-coded paint to assist identification of each grade of geogrid on site (see Table 1).

3.3 Rolls should be stored in clean, dry conditions and protected from mechanical or chemical damage and extreme temperatures. When laid horizontally, the rolls may be stacked up to five high. Other loads must not be stored on top of the stack.

3.4 Toxic fumes are given off if the geogrids catch fire and, therefore, the necessary precautions should be taken following the instructions given in the material safety data sheet for the product.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Enkagrid PRO Geogrids.

Design Considerations

4 General

4.1 When designed in accordance with this Certificate, Enkagrid PRO Geogrids are satisfactory for the reinforcement to embankments, with maximum slope angles of 70°.

4.2 Structural stability is achieved through the frictional interaction of the soil particles with the geogrids and its tensile strength.

4.3 The fill specification and method of placement and compaction, design strength of the reinforcement and length of reinforcement embedded within the compacted fill are the key design factors.

4.4 Prior to the commencement of work, the designer must satisfy the design approval and certification procedures of the relevant Highway Authority.

4.5 Particular attention must be made in design to the following issues:

- site preparation and embankment construction
- fill material properties
- drainage
- protection of the product against damage from site traffic and installation equipment
- the stability of existing structures in close proximity
- design of the embankment facing.

4.6 The working drawings should show the correct orientation of the geogrids. Each layer of reinforcement must be continuous in the direction of load, ie without overlaps.

5 Practicability of installation

The products are readily installed by trained contractors in accordance with the specifications and construction drawings (see the *Installation* part of this Certificate).

6 Design

Design methodology

6.1 Reinforced soil embankments constructed using Enkagrid PRO Geogrids should be designed in accordance with BS 8006-1 : 2010 and the *Manual of Contract Documents for Highways Works* (MCHW), Volume 1 *Specification for Highway Works* (SHW).

6.2 The typical service life given in Table 7 of BS 8006-1 : 2010 for reinforced soil embankments is 60 years.

Geogrid reinforcement

6.3 In accordance with the methodology set out in BS 8006-1 : 2010, Annex 3, the design strength of the reinforcement (T_D) is calculated as:

$T_D = T_{CR}/f_m$

where:

T_{CR} is the long-term tensile creep rupture strength of the reinforcement at the specified design life and design temperature
f_m is the material safety factor to allow for the strength reducing effects of installation damage, weathering (including exposure to sunlight), chemical and other environmental effects and to allow for the extrapolation of data required to establish the above reduction factors.

6.4 The long-term tensile creep rupture strength (T_{CR}) for each grade of geogrid is calculated using the formula:

$T_{CR} = T_{char}/RF_{CR}$

where:

T_{char} is the characteristic short-term strength of the geogrid taken from Table 2
RF_{CR} is the reduction factor for creep (see Section 7).

6.5 The material safety factor (f_m) is calculated as:

$f_m = RF_{ID} \times RF_W \times RF_{CH} \times f_S$

where:

RF_{ID} is the reduction factor for installation damage
RF_W is the reduction factor for weathering, including exposure to ultraviolet (UV) light
RF_{CH} is the reduction factor for chemical/environmental effects
f_S is the factor of safety for the extrapolation of data.

6.6 Recommended values for RF_{CR}, RF_{ID}, RF_{W}, RF_{CH} and f_S are given in sections 7, 8 and 9 of this Certificate. Conditions of use outside the scope for which the reduction factors are defined are outside the scope of this Certificate and advice should be sought from the Certificate holder.

Soil/geogrid interaction

6.7 There are two limiting modes of interaction between the soil and the reinforcement that need to be considered during the design:

- direct sliding — where the soil above the layer of reinforcement can slide over the reinforcement
- pull-out — where the layer of reinforcement pulls out of the soil, after it has mobilised the maximum available bond stresses.

6.8 CIRIA SP123, 1996, sections 4.5 and 4.6 describes the following methods for determining resistance to direct sliding and maximum available bond, to which the appropriate partial factors should be applied in accordance with BS 8006-1 : 2010.

Direct Sliding

6.9 The theoretical expression for resistance to direct sliding = f_{ds} x tan ϕ'

where:

f_{ds} is the coefficient of direct sliding
tan ϕ' is the shearing resistance of the soil
ϕ' angle of shearing resistance for the soil.

6.10 The direct sliding coefficient (f_{ds}) is calculated as:

$f_{ds} = \alpha_s$ x (tan δ/tan ϕ') + (1 – α_s)

where:

α_s is the proportion of plane sliding area that is solid
δ is the angle of skin friction, soil on planar reinforcement surface
tan δ/tan ϕ' is the coefficient of skin friction between the soil and geogrid material.

6.11 For initial design purposes, the coefficient of skin friction (tan δ/tan ϕ') for determining the resistance to direct sliding for the geogrid when buried in compacted frictional fill may be conservatively assumed to be 0.6. Values for the proportion of plane sliding area that is solid (α_s) are given in Table 3.

Table 3 Soil geogrid interaction parameters for Enkagrid PRO Geogrids

Grade	**α_s**(1)	**Ratio of bearing**(2) **surface to plan area α_b x B/2S**
PRO 40	0.25	0.003
PRO 60	0.31	0.002
PRO 90	0.36	0.002
PRO 120	0.37	0.002
PRO 180	0.37	0.002

(1) α_s is the proportion of the plane sliding area that is solid and is required for the calculation of the bond coefficient (f_b) and the direct sliding coefficient (f_{ds}) (see sections 6.10 and 6.14).
(2) The ratio of bearing surface to plan area is required to calculate the bond coefficient (f_b) in accordance with CIRIA SP123 : 1996 (see section 6.14):

- α_b is the proportion of the grid width available for bearing
- *B* is the thickness of a transverse member of a grid taking bearing
- *S* is the spacing between transverse members taking bearing.

6.12 For detailed design, the resistance to direct sliding should be determined from soil and geogrid specific shear box testing. Soil specific testing has shown that f_{ds} values > 1.0 can be achieved.

Bond

6.13 The theoretical expression for maximum bond shearing resistance = f_b x tan ϕ'

where:

f_b	is the bond coefficient
tan ϕ'	is the shearing resistance of the soil
ϕ'	is the effective angle of friction of soil.

6.14 The bond coefficient may be calculated as:

$$f_b = \alpha_s \times (\tan \delta / \tan \phi') + (\sigma'_b/\sigma'_n) \times ((\alpha_b \times B/2S) \times (1/\tan \phi')$$

where:

α_s	is the proportion of plane sliding area that is solid
tan δ/tan ϕ'	is the coefficient of skin friction between the soil and geogrid material
σ'_b / σ'_n	is the bearing stress ratio
α_b x B/2S	is the ratio of bearing surface to plan area
ϕ'	is the effective angle of friction of soil
δ	is the angle of skin friction, soil on planar reinforcement surface
σ'_b	is the effective bearing stress on the reinforcement
σ'_n	is the normal effective stress.

6.15 For initial design purposes the coefficient of skin friction (tan δ/tan ϕ') for the product when buried in frictional fill may be conservatively assumed to be 0.6. Values for the ratio of bearing surface to plan area (α_b x B/2S) are given in Table 3. Typical values for the bearing stress ratio (σ'_b/σ'_n) are given in CIRIA SP123, 1996, Table 4.1.

6.16 The BBA recommends that site-specific pull-out tests are carried out to confirm the value of bond coefficient (f_b) used in the final design. Values of f_b > 1.0 have been reported based on site and soil specific testing.

Fill material

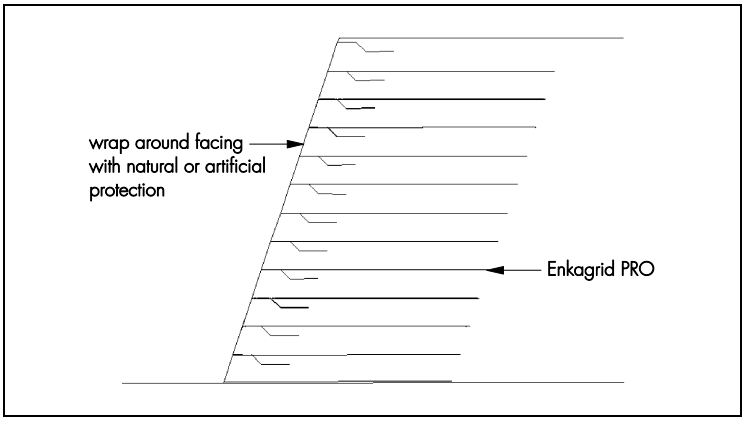
6.17 The designer should specify the relevant properties of fill material deemed acceptable for the purpose of the design. Acceptable materials should satisfy the requirements of BS 8006-1 : 2010 and the MCHW, Volume 1.

Facings

6.18 A typical wrap around facing detail formed using the geogrid is shown in Figure 3.

6.19 Where the geogrids are used to form the facing, natural or artificial protection must be provided to the grids and fill material to protect the geogrid against damage from UV light, fire and vandalism, and to protect the fill material from erosion.

Figure 3 Facings



6.20 Other types of facing including preformed panels, gabions/gabion sacks and other proprietary systems may be used, but are outside the scope of this Certificate. Further guidance is given in BS 8006-1 : 2010.

7 Mechanical properties

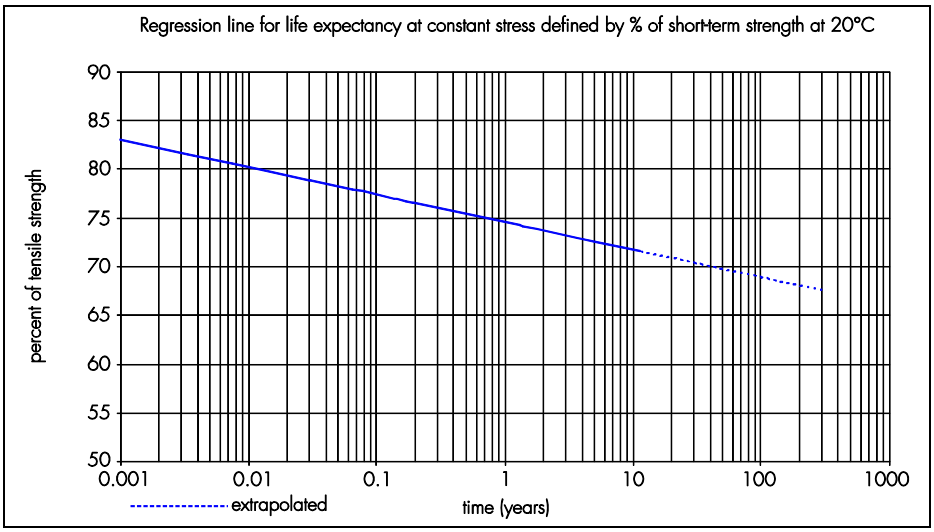
Tensile strength — short-term

7.1 Characteristic short-term tensile strength (T_{char}) and strain values for the product range are given in Table 2.

Tensile strength — long-term

7.2 The long-term creep performance of the geogrids has been determined in accordance with the principles of PD ISO/TR 20432 : 2007 using conventional creep rupture data in excess of 44,000 hours. The resultant creep rupture diagram is shown in Figure 4.

Figure 4 Time to rupture



7.3 For a 60-year design life and design temperature of 20°C, the long-term tensile strength (T_{CR}) of Enkagrid PRO Geogrids is 69% of the characteristic short-term tensile strength (T_{char}), giving a long-term creep reduction factor (RF_{CR}) of 1.45.

7.4 For a 120-year design life and design temperature of 20°C, the long-term tensile strength (T_{CR}) of Enkagrid PRO Geogrids is 68% of characteristic short-term tensile strength (T_{char}) giving a long-term creep reduction factor (RF_{CR}) of 1.47.

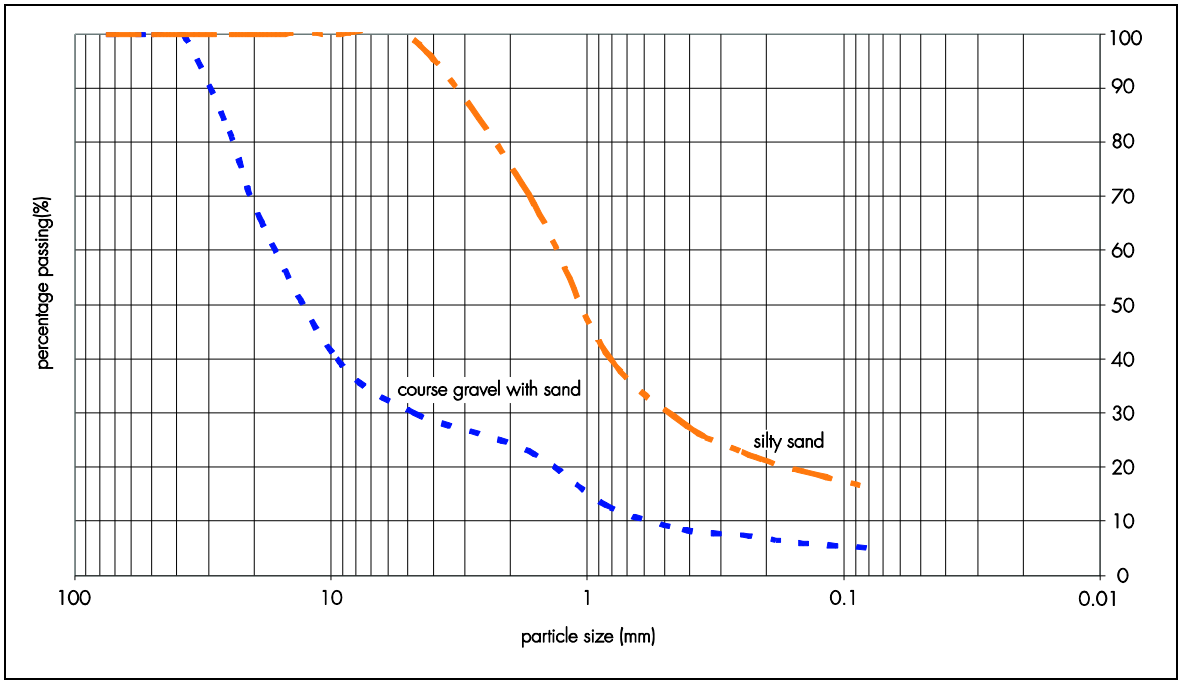
Installation damage (RF_{ID})

7.5 To allow for loss of strength due to mechanical damage that may be sustained during installation, the appropriate value for RF_{ID} should be selected from Table 4. These reduction factors have been established from full-scale installation damage tests using materials whose gradings can be seen in Figure 5 with a minimum compacted depth of 200 mm. For fills not covered by Table 4, appropriate values of RF_{ID} should be determined from site-specific trials.

Table 4 Reduction factors — installation damage (RF_{ID})

Soil type	D_{90} particle size (mm)	Product grade		
		PR 40	PRO 90	PRO 180
Coarse gravel with sand	≤ 30	1.03	1.05	1.03
Silty sand	≤ 4	1.04	1.02	1.02

Figure 5 Particle size distributions of fills used in installation damage



8 Effects of environmental conditions

Weathering (including exposure to UV light)

8.1 The geogrids do not exhibit a significant reduction in strength after exposure to natural daylight and weathering. A reduction factor (RF_W) of 1.08 may be used for design provided the geogrids are protected from exposure to sunlight in accordance with the recommendations of this Certificate and provided the periods of exposure are limited to a maximum of one month. Where it can be guaranteed that the maximum period of exposure of every section of the product will not exceed 24 hours, a reduction factor (RF_W) of 1.0 may be used. Further investigation is required for exposure periods exceeding one month.

Chemical/environmental effects

8.2 To take into account of chemical/environmental effects including hydrolysis, resistance to acidic and alkaline liquids and biological/microbial attack, the appropriate value of RF_{CH} shown in Tables 5 and 6 should be used.

Table 5 Reduction factor (RF_{CH}) — For a design life of up to 120 years and a design temperature ≤ 30°C

Soil pH	Reduction factor
2.0 to 4.0	1.10
4.1 to 8.9	1.00
9.0 to 10.0	1.10

Table 6 Reduction factor (RF_{CH}) — For the design lives shown and a design temperature ≤ 20°C

Soil pH	Reduction factor
10.1 to 12.5	1.16 (for a 60 year design life)
	1.34 (for a 120 year design life)

9 Factor of safety for the extrapolation of data (f_s)

9.1 For Enkagrid PRO Geogrids, the factor of safety for the extrapolation of data (fs) should be taken as given in Table 7.

Table 7 Factors of safety for extrapolation of data

Design life (years)	f_s
60	1.02
120	1.09

9.2 The values in Table 7 have been calculated in accordance with PD ISO/TR 20432 : 2007, using the R_1 and R_2 values given in Table 8.

Table 8 R_1 and R_2 values for determination of f

Factor	Taking account of:	Design life (years)	
		60	120
R_1	Extrapolation of creep rupture data	1.01	1.07
R_2	Extrapolation of chemical data	1.02	1.05

10 Maintenance

As the products are confined within the soil and have suitable durability, maintenance is not required.

11 Durability

When designed and installed in accordance with the requirements of BS 8006-1 : 2010, BS EN 14475 : 2006 and this Certificate, Enkagrid PRO Geogrids will have a service life in excess of 120 years, exceeding the typical design life required for reinforced soil embankments.

Installation

12 General

12.1 The construction of reinforced soil embankments incorporating the geogrids should be in accordance with the Certificate holder's *Installation instructions*, BS EN 14475 : 2006 and the MCHW, Volume 1.

12.2 Care must be exercised to ensure that the geogrids are laid with the roll length (longitudinal) direction parallel to the direction of principal stress. Design drawings should indicate geogrid orientation (see section 4.6).

13 Procedure

13.1 The geogrid is laid by unrolling the grid either manually or mechanically to the length required and cut with a sharp knife or scissors.

13.2 The grids should be laid flat without folds, parallel to each other and with widths in contact. Each reinforcing layer must be continuous in the direction of loading with no overlapping of the grids. Bar misalignment must not exceed 50 mm over a distance of 5 metres. Pins or a stretching device may be used to control alignment and also to induce a small prestressing load prior to filling.

13.3 Fill is placed to a minimum compacted depth of 200 mm, with particular care being taken to ensure that the grids are adequately covered before compaction or trafficking. Construction traffic will damage unprotected Enkagrid PRO Geogrids.

13.4 Maximum thickness of compaction layers depends on the type of fill and compaction equipment employed, but depths should not exceed 500 mm.

13.5 Facings are positioned as detailed on the engineer's design drawings. Where the geogrids are used as facings, the geogrid must be wrapped around and anchored back into the fill (see Figure 3). Formwork is used to assist in maintaining the shape of the facing. Facings, prefabricated or otherwise, are outside the scope of this Certificate.

Technical Investigations

14 Investigations

14.1 The manufacturing process was evaluated, including the methods adopted for quality control, and details were obtained of the quality and composition of the materials used.

14.2 An assessment was made of data relating to:

- evaluation of short- and long-term tensile properties
- an assessment of the test method for determining tensile creep rupture and creep strain results in comparison with the method given in EN ISO 13431 : 1998
- chemical resistance
- resistance to biological attack
- UV and environmental degradation
- effects of temperature
- site damage trials and resistance to mechanical damage
- the coefficient of friction between the geogrids and soil fill.

14.3 The practicability and ease of handling and installation were assessed.

Bibliography

BS 8006-1 : 2010 + A1 : 2016 *Code of practice for strengthened/reinforced soils and other fills*

BS EN 13251 : 2016 *Geotextiles and geotextile-related products — Characteristics required for use in earthworks, foundations and retaining structures*

BS EN 14475 : 2006 *Execution of special geotechnical works — Reinforced fill*

BS EN ISO 9864 : 2005 *Geosynthetics — Test method for the determination of mass per unit area of geotextiles and geotextile-related products*

BS EN ISO 10319 : 2008 *Geotextiles — Wide-width tensile test*

BS EN ISO 10320 : 1999 *Geotextiles and geotextile-related products— Identification on site*

BS EN ISO 13431 : 1999 *Geotextiles and geotextile-related products — Determination of tensile creep and creep rupture behaviour*

CIRIA SP123, 1996 *Soil Reinforcement with Geotextiles : Jewel R A,*

EN ISO 9001 : 2008 *Quality Management systems — Requirements*

Manual of Contract Documents for Highway Works, Volume 1 Specification for Highway Works

PD ISO/TR 20432 : 2007 *Guidelines for the determination of the long-term strength of geosynthetics for soil reinforcement*

15 Conditions

15.1 This Certificate:

- relates only to the product/system that is named and described on the front page
- is issued only to the company, firm, organisation or person named on the front page – no other company, firm, organisation or person may hold claim that this Certificate has been issued to them
- is valid only within the UK
- has to be read, considered and used as a whole document – it may be misleading and will be incomplete to be selective
- is copyright of the BBA
- is subject to English Law.

15.2 Publications, documents, specifications, legislation, regulations, standards and the like referenced in this Certificate are those that were current and/or deemed relevant by the BBA at the date of issue or reissue of this Certificate.

15.3 This Certificate will remain valid for an unlimited period provided that the product/system and its manufacture and/or fabrication, including all related and relevant parts and processes thereof:

- are maintained at or above the levels which have been assessed and found to be satisfactory by the BBA
- continue to be checked as and when deemed appropriate by the BBA under arrangements that it will determine
- are reviewed by the BBA as and when it considers appropriate.

15.4 The BBA has used due skill, care and diligence in preparing this Certificate, but no warranty is provided.

15.5 In issuing this Certificate the BBA is not responsible and is excluded from any liability to any company, firm, organisation or person, for any matters arising directly or indirectly from:

- the presence or absence of any patent, intellectual property or similar rights subsisting in the product/system or any other product/system
- the right of the Certificate holder to manufacture, supply, install, maintain or market the product/system
- actual installations of the product/system, including their nature, design, methods, performance, workmanship and maintenance
- any works and constructions in which the product/system is installed, including their nature, design, methods, performance, workmanship and maintenance
- any loss or damage, including personal injury, howsoever caused by the product/system, including its manufacture, supply, installation, use, maintenance and removal
- any claims by the manufacturer relating to CE marking.

15.6 Any information relating to the manufacture, supply, installation, use, maintenance and removal of this product/system which is contained or referred to in this Certificate is the minimum required to be met when the product/system is manufactured, supplied, installed, used, maintained and removed. It does not purport in any way to restate the requirements of the Health and Safety at Work etc. Act 1974, or of any other statutory, common law or other duty which may exist at the date of issue or reissue of this Certificate; nor is conformity with such information to be taken as satisfying the requirements of the 1974 Act or of any statutory, common law or other duty of care.

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